The Evening Sky Map

FREE* EACH MONTH FOR YOU TO EXPLORE, LEARN & ENJOY THE NIGHT SKY

WWW.SKYMAPS.COM

SOUTHERN HEMISPHERE
DECEMBER 2013

Sky Calendar – December 2013

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1 **Moon near Saturn** (22° from Sun, morning sky) at 8h UT. Mag. +0.6.

1 **Moon near Mercury** (15° from Sun, morning sky) at 23h UT. Mag. –0.7.

3 **New Moon** at 00:21 UT. Start of lunation 1125.

4 **Moon at perigee** (closest to Earth) at 10h UT (360,067 km; angular size 33.2').

5 **Moon near Venus** (40° from Sun, evening sky) at 22h UT. Mag. –4.7.

9 **First Quarter Moon** at 15:12 UT.

10 **Venus brightest** at 2h UT. Mag. –4.7.

14 **Geminid Meteor Shower** peaks at 6h UT. Most active for 21 hours from 13h UT Dec 13. Produces bright, medium-speed meteors at its peak (up to 80 meteors/hour). Major meteor shower. Easy to observe (radiant near Castor). Best seen after midnight. Moonlight makes viewing conditions less than ideal this year.

15 **Moon near the Pleiades** (evening sky) at 5h UT.

16 **Moon near Aldebaran** (evening sky) at 2h UT.

17 **Full Moon** at 9:28 UT.

19 **Moon near Jupiter** (morning sky) at 4h UT. Mag. –2.7.

20 **Moon at apogee** (farthest from Earth) at 0h UT (distance 406,269 km; angular size 29.4').

20 **Moon near Beehive Cluster** (morning sky) at 23h UT.

21 **December solstice** at 17:11 UT. The time when the Sun reaches the point farthest south of the celestial equator marking the start of winter in the Northern Hemisphere and summer in the Southern Hemisphere.

22 **Moon near Regulus** (morning sky) at 21h UT.

25 **Last Quarter Moon** at 13:49 UT.

26 **Moon near Mars** (morning sky) at 0h UT. Mag. +0.9.

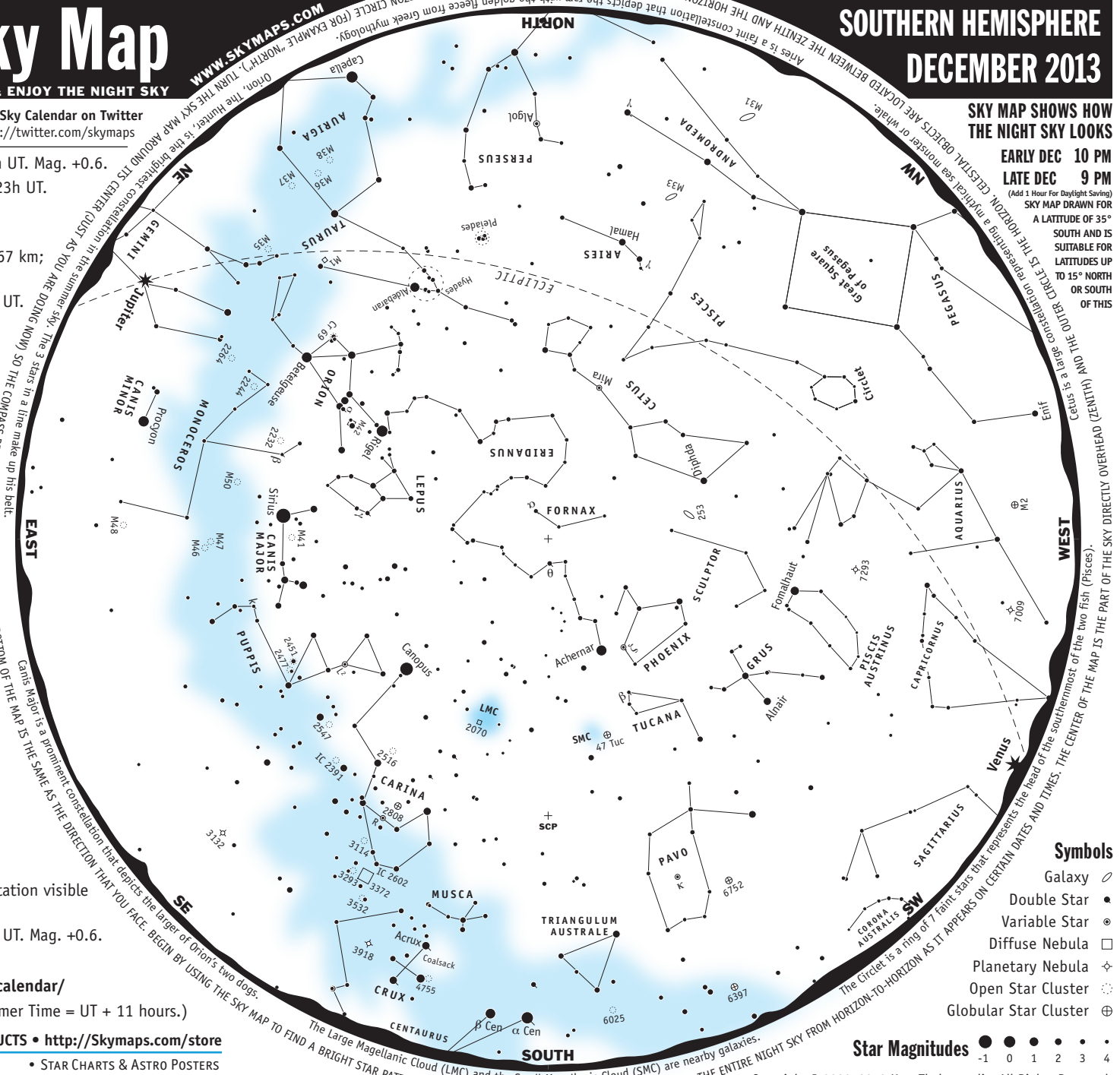
27 **Moon very near Spica** (morning sky) at 2h UT. Occultation visible from NW Asia and Scandinavia.

29 **Moon near Saturn** (47° from Sun, morning sky) at 0h UT. Mag. +0.6.

30 **Moon near Antares** (morning sky) at 8h UT.

More sky events and links at http://Skymaps.com/skycalendar/

All times in Universal Time (UT). (Australian Eastern Summer Time = UT + 11 hours.)



SKY MAP SHOWS HOW THE NIGHT SKY LOOKS

EARLY DEC 10 PM
LATE DEC 9 PM
(Add 1 Hour For Daylight Saving)

SKY MAP DRAWN FOR A LATITUDE OF 35° SOUTH AND IS SUITABLE FOR LATITUDES UP TO 15° NORTH OR SOUTH OF THIS

CONSTELLATION CIRCLE IS THE HORIZON. CELESTIAL OBJECTS ARE LOCATED BETWEEN THE ZENITH AND THE HORIZON. COMPASS DIRECTIONS ARE INDICATED ALONG THE HORIZON CIRCLE (FOR EXAMPLE, "NORTH"). TURN THE SKY MAP AROUND ITS CENTER (JUST AS YOU ARE DOING NOW) SO THE COMPASS DIRECTION THAT APPEARS ALONG THE BOTTOM OF THE MAP IS THE SAME AS THE DIRECTION THAT YOU FACE. BEGIN BY USING THE SKY MAP TO FIND A BRIGHT STAR PATTERN IN THE SKY.

INSTRUCTIONS: THE SKY MAP SHOWS THE ENTIRE NIGHT SKY FROM HORIZON-TO-HORIZON AS IT APPEARS ON CERTAIN DATES AND TIMES. THE CENTER OF THE MAP IS THE PART OF THE SKY DIRECTLY OVERHEAD (ZENITH).

Symbols

- Galaxy
- Double Star
- Variable Star
- Diffuse Nebula
- Planetary Nebula
- Open Star Cluster
- Globular Star Cluster

Star Magnitudes -1 0 1 2 3 4

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About the Celestial Objects

Listed on this page are several of the brighter, more interesting celestial objects visible in the evening sky this month (refer to the monthly sky map). The objects are grouped into three categories. Those that can be easily seen with the naked eye (that is, without optical aid), those easily seen with binoculars, and those requiring a telescope to be appreciated. **Note, all of the objects (except single stars) will appear more impressive when viewed through a telescope or very large binoculars.** They are grouped in this way to highlight objects that can be seen using the optical equipment that may be available to the star gazer.

Tips for Observing the Night Sky

When observing the night sky, and in particular deep-sky objects such as star clusters, nebulae, and galaxies, it's always best to observe from a dark location. Avoid direct light from street lights and other sources. If possible observe from a dark location away from the light pollution that surrounds many of today's large cities.

You will see more stars after your eyes adapt to the darkness—usually about 10 to 20 minutes after you go outside. Also, if you need to use a torch to view the sky map, cover the light bulb with red cellophane. This will preserve your dark vision.

Finally, even though the Moon is one of the most stunning objects to view through a telescope, its light is so bright that it brightens the sky and makes many of the fainter objects very difficult to see. So try to observe the evening sky on moonless nights around either New Moon or Last Quarter.

Astronomical Glossary

Conjunction – An alignment of two celestial bodies such that they present the least angular separation as viewed from Earth.

Constellation – A defined area of the sky containing a star pattern.

Diffuse Nebula – A cloud of gas illuminated by nearby stars.

Double Star – Two stars that appear close to each other in the sky; either linked by gravity so that they orbit each other (binary star) or lying at different distances from Earth (optical double). Apparent separation of stars is given in seconds of arc (").

Ecliptic – The path of the Sun's center on the celestial sphere as seen from Earth.

Elongation – The angular separation of two celestial bodies. For Mercury and Venus the greatest elongation occurs when they are at their most angular distance from the Sun as viewed from Earth.

Galaxy – A mass of up to several billion stars held together by gravity.

Globular Star Cluster – A ball-shaped group of several thousand old stars.

Light Year (ly) – The distance a beam of light travels at 300,000 km/sec in one year.

Magnitude – The brightness of a celestial object as it appears in the sky.

Open Star Cluster – A group of tens or hundreds of relatively young stars.

Opposition – When a celestial body is opposite the Sun in the sky.

Planetary Nebula – The remnants of a shell of gas blown off by a star.

Universal Time (UT) – A time system used by astronomers. Also known as Greenwich Mean Time. Australian Eastern Standard Time (Sydney, Australia) is UT plus 10 hours.

Variable Star – A star that changes brightness over a period of time.

CELESTIAL OBJECTS

SOUTHERN HEMISPHERE
DECEMBER 2013

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Easily Seen with the Naked Eye

Capella	Aur	●	The 6th brightest star. Appears yellowish in color. Spectroscopic binary. Dist=42 ly.
Sirius	CMa	●	The brightest star in the sky. Also known as the "Dog Star". Dist=8.6 ly.
Procyon	CMi	●	Greek name meaning "before the dog" - rises before Sirius (northern latitudes). Dist=11.4 ly.
Canopus	Car	●	Second brightest star in the sky. 14,000 times more luminous than the Sun. Dist=309 ly.
β Centauri	Cen	●	With Alpha Centauri, forms the so-called "Pointers-to-the-Cross". Dist=525 ly.
α Centauri	Cen	◔	Nearest bright star to Sun at 4.4 ly. Brilliant double star in a telescope. 80 year period.
Achernar	Eri	●	Brightest star in Eridanus, The River. Arabic name meaning "end of river". Dist=140 ly.
Rigel	Ori	●	The brightest star in Orion. Blue supergiant star with mag 7 companion. Dist=770 ly.
Betelgeuse	Ori	●	One of the largest red supergiant stars known. Diameter=300 times that of Sun. Dist=430 ly.
Algol	Per	◉	Famous eclipsing binary star. Magnitude varies between 2.1 & 3.4 over 2.867 days.
Fomalhaut	PsA	●	Brightest star in Piscis Austrinus. In Arabic the "fish's mouth". Dist=25 ly.
Pleiades	Tau	⁘	The Seven Sisters. Spectacular cluster. Many more stars visible in binoculars. Dist=399 ly.
Hyades	Tau	⁘	Large V-shaped star cluster. Binoculars reveal many more stars. Dist=152 ly.
Aldebaran	Tau	●	Brightest star in Taurus. It is not associated with the Hyades star cluster. Dist=66.7 ly.

Easily Seen with Binoculars

M31	And	⬭	The Andromeda Galaxy. Most distant object visible to naked eye. Dist=2.5 million ly.
M41	CMa	⁘	First recorded observation by Aristotle in 325 BC as "cloudy spot". Dist=2,300 ly.
2516	Car	⁘	Spectacular open star cluster of 100 stars spaning 1/2 deg. Dist=1,300 ly.
2808	Car	⊕	Located 4 deg W of Nu Carinae. Visible to the naked eye on clear nights.
R Carinae	Car	◉	Long period variable. Magnitude varies between 3.9 & 10.5 over 309 days.
Mira	Cet	◉	Famous long period variable star. Mag varies between 3.0 & 10.1 over 332 days.
LMC	Dor	⬭	Large Magellanic Cloud. A neighbouring galaxy of the Milky Way. Dist=180,000 ly.
M35	Gem	⁘	Fine open cluster located near foot of the twin Castor. Dist=2,800 ly.
γ Leporis	Lep	◔	Visible with binoculars. Gold & white stars. Mags 3.6 & 6.2. Dist=30 ly. Sep=96.3".
2232	Mon	⁘	A large scattered star cluster of 20 stars. Dist=1,300 ly.
2244	Mon	⁘	Surrounded by the rather faint Rosette Nebula. Dist=5,540 ly.
M50	Mon	⁘	Visible with binoculars. Telescope reveals individual stars. Dist=3,000 ly.
Cr 69	Ori	⁘	Lambda Orionis Cluster. Dist=1,630 ly.
M42	Ori	□	The Great Orion Nebula. Spectacular bright nebula. Best in telescope. Dist=1,300 light years.
κ Pavonis	Pav	◉	Cepheid-type. Magnitude varies between 3.9 & 4.8 over 9.088 days.
6752	Pav	⊕	One of the better globular star clusters in the sky. Dist=14,000 ly.
ζ Phoenicis	Phe	◔	Eclipsing binary star and double (mag 8). Varies between 3.9 & 4.4 over 1.667 days.
L^2	Pup	◉	Semi-regular variable. Magnitude varies between 2.6 & 6.2 over 140.42 days.
M47	Pup	⁘	Bright star cluster. 15+ stars in 7x binoculars. Dist=1,500 ly.
M46	Pup	⁘	Dist=5,400 ly. Contains planetary NGC 2438 (Mag 11, d=65") - not associated.
2451	Pup	⁘	30+ stars in binoculars. The brightest star, χ Puppis, is red. Dist=850 ly.
2477	Pup	⁘	Very rich but distant star cluster (4,200 ly). Resembles globular through binoculars.
253	Scl	⬭	Fine, large, cigar-shaped galaxy. Requires dark sky. Member of Sculptor Group.
47 Tucanae	Tuc	⊕	Spectacular object. Telescope will reveal stars. Near edge of SMC. Dist=15,000 ly.
β Tucanae	Tuc	◔	Complex multiple star. Binoculars show one pair. Telescope required to split primary star.
SMC	Tuc	⬭	Small Magellanic Cloud. Companion galaxy to Milky Way. Requires dark sky. Dist=210,000 ly.
2547	Vel	⁘	Fine open cluster visible through binoculars. Dist=1,300 ly.
IC 2391	Vel	⁘	Omicron Velorum Cluster. Superb object for binoculars. Dist=450 ly.

Telescopic Objects

γ Andromedae	And	◔	Attractive double star. Bright orange star with mag 5 blue companion. Sep=9.8".
7293	Aqr	✧	Helix Nebula. Spans nearly 1/4 deg. Requires dark sky. Dist=300 ly.
γ Arietis	Ari	◔	Impressive looking double blue-white star. Visible in a small telescope. Sep=7.8".
2070	Dor	□	Tarantula Nebula. A bright nebula located in LMC. A star-forming region.
θ Eridani	Eri	◔	Striking blue-white double star. Mags 3.2 & 4.3. Visible in a small telescope. Sep=8.2".
β Monocerotis	Mon	◔	Triple star. Mags 4.6, 5.0 & 5.4. Requires telescope to view arc-shape. Sep=7.3".
2264	Mon	⁘	Christmas Tree Cluster. Associated with the Cone Nebula. Dist=2,450 ly.
σ Orionis	Ori	◔	Superb multiple star. 2 mag 7 stars one side, mag 9 star on other. Struve 761 triple in field.
k Puppis	Pup	◔	Telescope easily shows two blue-white stars of almost equal brightness. Sep=9.9".
M1	Tau	□	Crab Nebula. Remnant from supernova which was visible in 1054. Dist=6,500 ly.
M33	Tri	⬭	Fine face-on spiral galaxy. Requires a large aperture telescope. Dist=2.3 million ly.

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